



'79 will surely be remembered as the year of the great snows. LAB NEWS photographer Bill Laskar composed this study of the white stuff on nearby Los Altos golf course.

# LAB NEWS

VOL. 31, NO. 5

MARCH 9, 1979

SANDIA LABORATORIES • ALBUQUERQUE NEW MEXICO • LIVERMORE CALIFORNIA • TONOPAH NEVADA

## Smoking & Health Colloquia Set

A recent HEW report has once again called attention to the health hazards of smoking. For example, cigarette smokers have twice the risk of death from coronary heart disease as non-smokers. Also, cigarette smoking is estimated to be responsible for one in every five cancer deaths. The list of other effects is considerable. It is significant to note, however, that through preventive measures many of the deleterious effects of smoking are reversible.

To provide further information and assistance, Sandia Medical is sponsoring a two-part program on smoking and health. In the first part, a colloquium will be held on March 14 at 10 a.m., Bldg. 815, featuring Charles Key, MD, a pathologist at the UNM Medical School, and Jonathan Samet, MD, a pulmonary disease specialist at BCMC. Drs.

Key and Samet will discuss the hazards of smoking.

One week later, on March 22 at 10 a.m., techniques on how to stop smoking will be discussed by a panel which includes Dr. Paul Mossman and clinical psychologist Arlene Price of Sandia Medical as well as representatives from different health activities in the community. Guest panelists include Roy Moody from the New Mexico Lung Assn.; Lillian Manzer from the American Cancer Society; clinical psychologist Paul Moomaw and Robert DeFelice from the Cancer Control Program.

The program is offered under the Sandia Colloquium series. Dr. Jack Fitzpatrick (Sandia Medical) is host moderator for the guests. Arlene Price, 4-1057, or Philip Cheromiah, 4-3993, may be called for further information.

### At Tonopah Test Range

## Pershing II Earth Penetrator Test Successful

The weather was miserable — snow, icy rain, fierce gusts of wind. At the not-so-dry lake target area at Tonopah Test Range, the first engineering development Pershing II earth penetrator was loaded into the TTR Davis gun and fired point blank into the ground. It was a prototype of the proposed penetrator.

The 400-lb. test unit was driven like a bullet 67.5 ft. deep into the compacted silt and cemented sand of the lake bed. Inside the steel case of the penetrator were simulated components of the weapon electrical system, a special telemetry package and a mock-up LASL device.

"We had a successful test," says Bill Patterson (4342), project leader. "This was a slightly different case design from previous tests, and it performed as expected. Our unit withstood the acceleration and deceleration loads, although we did find one internal problem that needs more work. The TM package designed by Ray Wood and Division 1582 provided a complete acceleration and deceleration load profile of the test. We're still analyzing data, but what we have looks good."

The Pershing II earth penetrator will be  
(Continued on Page Four)

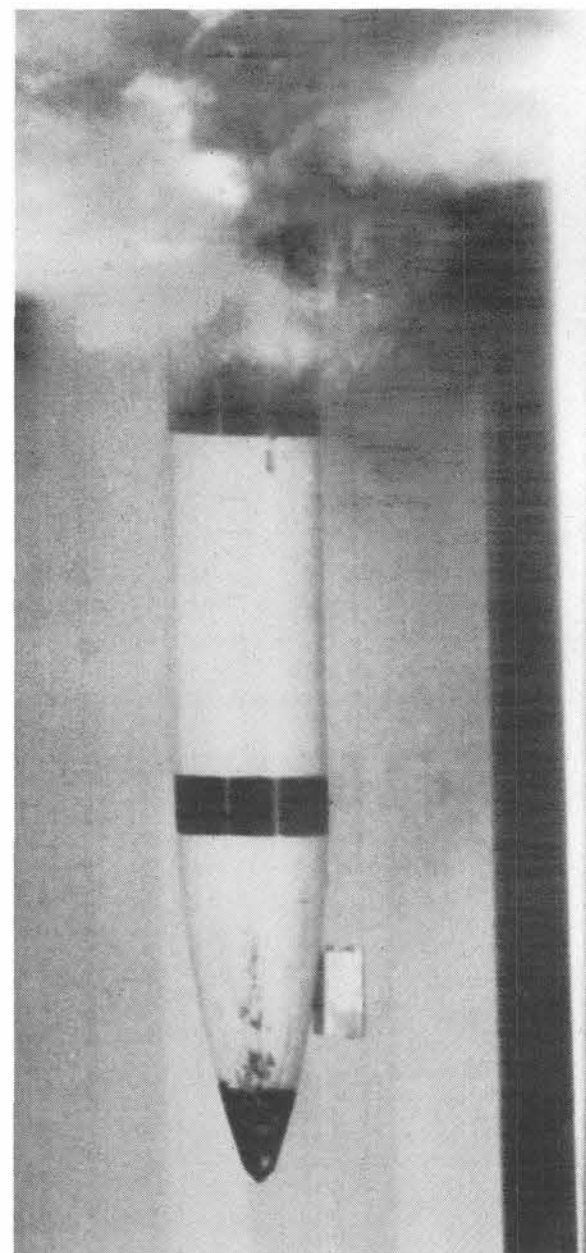


IMAGE MOTION CAMERA caught the Pershing II penetrator as it left muzzle of the Davis gun. Velocity was 1795 feet per second at this point. Small box at nose of penetrator housed accelerometer, sheered off at impact. Terry Leighly (1556) headed photometrics effort for the recent test.



MARV DANIEL (2113)



MEL MEFFORD, Assistant to Vice President 3000

## Supervisory Appointments

MARV DANIEL to supervisor of Computer-Aided Design Division 2113, effective March 1. Following graduation in 1961 from Kansas State with a BS in EE, Marv joined the Labs as a member of the Technical Development Program. While working in field test equipment design, he received his MS in EE from UNM. Marv left Sandia in September 1963 to return to school; he was awarded a PhD in EE from Oklahoma State and rejoined Sandia in 1966. His work at the Labs has been with computer-aided modeling and circuit analysis, radiation effects in semi-conductors, advanced electrical systems in Phase I and II weapons systems and, more recently, he has worked on energy systems analyses.

Off the job, Marv enjoys gardening, golfing and bowling. He is currently president of the board of directors of Sandia's Credit Union. Marv lives in NE Albuquerque.

MEL MEFFORD to Assistant to Vice President 3000, effective March 1. Since coming to the Labs 15 years ago as a systems analyst, Mel has worked with systems and

procedures groups and with the library as an analyst. He was a section supervisor in accounts payable during 1970-71; other assignments have been in budgeting systems, position evaluation, and purchasing systems. Since 1976, Mel has been budget coordinator for the 3000 organization. Mel earned a BS and MBA in industrial management from Texas Tech.

Mel's interests off the job include square dancing, tennis, racquet ball and bridge. He and his wife Pat have two children and live in the NE heights.

## Events Calendar

March 9 — "Spectacular V," collegiate singers concert, 8:15 p.m., Popejoy, 277-3121.

March 10 — "The Sound of Music," Broadway touring group with Sally Howe, Cultural Entertainment Series, Popejoy, 277-3121.

March 10-11, 17-18 — Boat inspections, N.M. State Fairgrounds, racetrack infield.

March 11 — N.M. Buckskin Horse Association Open All Breed Training Show, N.M. State Fair Horse Arena, 9 a.m., 898-3740.

March 11 — Poetry reading, 2 p.m., Albuquerque United Artists, Downtown Center for the Arts, 216 Central Ave. SW.

March 12-13 — Santa Fe Jazzdance, "Waves IV," 8:15 p.m., Popejoy.

March 14 — N.M. Symphony Orchestra Woodwind Quintet and principle harpist, Main Library, 5th & Copper NW, 7 p.m.

March 16-17 — "Dances In The High Desert," Performing Arts Collective, Kiva Auditorium, Convention Center, 898-7310.

March 17 — YAFL Registration, 5300 Ponderosa NE, 9 a.m. - 4 p.m.

March 17-18, 24-25 — Albuquerque Rose Society pruning demonstration, Prospect Park Rose Garden, 10 a.m. - 3 p.m.

March 19 — Harvest Dance, annual St. Joseph Feast Day, Laguna Pueblo.

March 22 — "Don Cooper Builds A Boat," Kiwanis travel film, Popejoy.

March 23 — Seraphim Trio Concert, 8:15 p.m., Keller Hall, UNM.

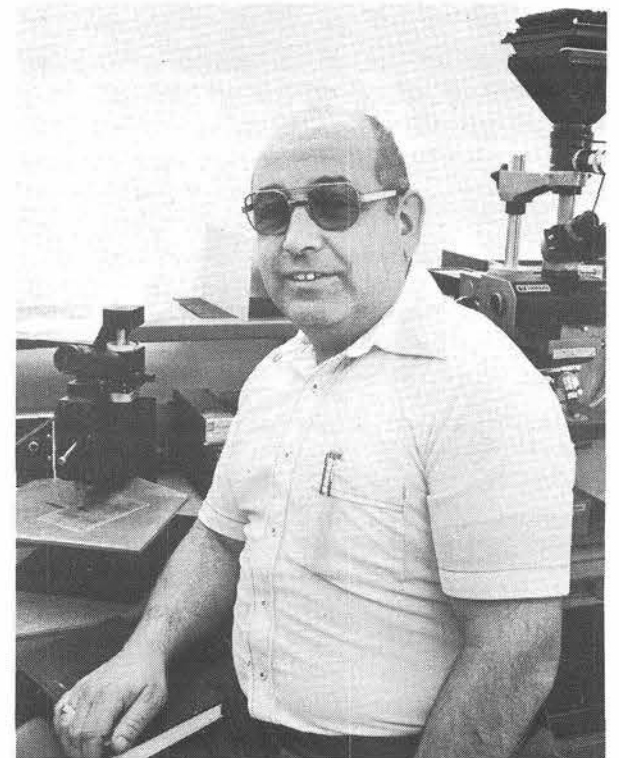
## Sandian Writes Chapter in Printed Circuit Handbook

Published by McGraw Hill for the first time in 1967, the "Printed Circuits Handbook" has become a major reference source in the electronics industry.

Recently, a second edition has come out with updated chapters, plus 12 additional chapters covering new ground in the printed circuit field. One of the latter — Chapter 19's "Acceptability of Fabricated Circuits" — was contributed by Arnie Andrade of Model Labs Division 8424.

At Sandia since 1959, Arnie has been SLL's representative to the Institute of Printed Circuits for 10 years; for seven of these he served as general chairman of the IPC Product Assurance Committee.

Arnie reports that the new handbook has been well received and is currently on the best seller list for engineering publications.



ARNIE ANDRADE (8424)

## Authors

Jack Swearingen (8316), "Unique Material Requirements for the 10 MW Electric Solar Pilot Plant," 1979 Golden Gate Welding Conference, Jan. 31-Feb. 1, San Francisco, CA.

Art Pontau, Lee Haggmark, Ken Wilson, Bob Bastasz, Mike Malinowski, Dan Dawson and Walt Bauer (all 8340), "Deuterium Profiles in Titanium and Alloys"; Mike Malinowski, "The Desorption of TiD<sub>2</sub> Films Formed During Simulated Tokamak Gettering Cycles"; Lee Haggmark, "Monte Carlo Studies of Light Ion Reflection from Metal Surfaces"; Ken Wilson and Art Pontau, "The Temperature Dependence of Deuterium Trapping in Fusion Reactor Materials"; Bill Swansiger (8347), "Tritium Transport in Stainless Steels — Surface Effects"; and Mike Baskes and George Look Zboth (8341), "Hydrogen Profiles in Tokamak Fusion Reactor First Walls," American Nuclear Society First Topical Meeting on Fusion Reactor Materials, Jan. 29-31, Miami Beach, FL.

## Sympathy

To Ruby Bell (8264) on the death of her mother in Livermore, Feb. 18.



Leading a dog's life? You should have it so good. A recent survey reveals that old Bowser often gets rated number one in response to the question: "Which member of your family do you feel closest to?" He also gets more "strokes" (literally and figuratively) in nearly half the families surveyed. Thirty-six percent of the interviewees thought of their pets as people — giving them names like Joshua, Stephanie and Ethel. Another eight percent saw their pets as somewhere between an animal and a person — a perception that holds true, we submit, whether one is categorizing pets or people.

## LAB NEWS

Published every other Friday

SANDIA LABORATORIES

An Equal Opportunity Employer

ALBUQUERQUE, NEW MEXICO  
LIVERMORE, CALIFORNIA  
TONOPAH, NEVADA

Editorial offices in Albuquerque, N.M.

Area 505 264-1053

FTS 475-1053

ZIP 87185

In Livermore Area 415 422-2447

FTS 532-2447

john shunny is editor

&

don graham ass't. editor

chuck cockelreas & norma taylor write

bill laskar does picture work

bruce hawkinson & lorena schneider report livermore.

# LIVERMORE NEWS

VOL. 31, NO. 5

LIVERMORE LABORATORIES

MARCH 9, 1979



GERTRUDE WILLIAMS (8212)

## Gertrude Williams Named To LARPD Commission

The Board of the Livermore Area Recreation and Park District has appointed Gertrude Williams (8212) to its Personnel Commission for a four-year term. LARPD provides recreational programs for all age groups in the Livermore-Amador Valley, and does the planning, developing and maintaining of park properties.

Working in an advisory capacity, the five-person Personnel Commission deals with LARPD employment policies, salaries, personnel rules and employee appeals.

Currently concerned with technical institute recruiting and working as women's program coordinator in SLL's Personnel Division, Gertrude previously supervised Information and Distribution Section and was a programmer in the Computing Division. She has a BS in business administration from South Carolina State College and an MBA from Golden Gate University in San Francisco. Before joining Sandia in 1963, she taught at S.C. State and worked for the Job Corps.

Don Wagner (8212) and Marlin Pound (8214) are also active in LARPD.



ANDREW TURNBULL, agriculture's tractorcade, the Mall and the Capitol.

## Sandian Gets Close-Up View of Government

If you really want to see government in action, you have to stalk it to its lair. In the US, that's Washington, and that's just where Andrew Turnbull, a Work Experience student in the Computing Division 8333, went last month for a close-up view.

Close-Up just happens to be the name of the organization conducting the tour/seminar for high school students all over the country. Andrew paid most of his own expenses and for his money returned with a somewhat more informed, somewhat less idealistic view of federal government.

"I went there pretty naive," he reports, "went through some strong feelings of frustration, and came back optimistic — well, cautiously optimistic, at least."

The cause of his frustration was not the

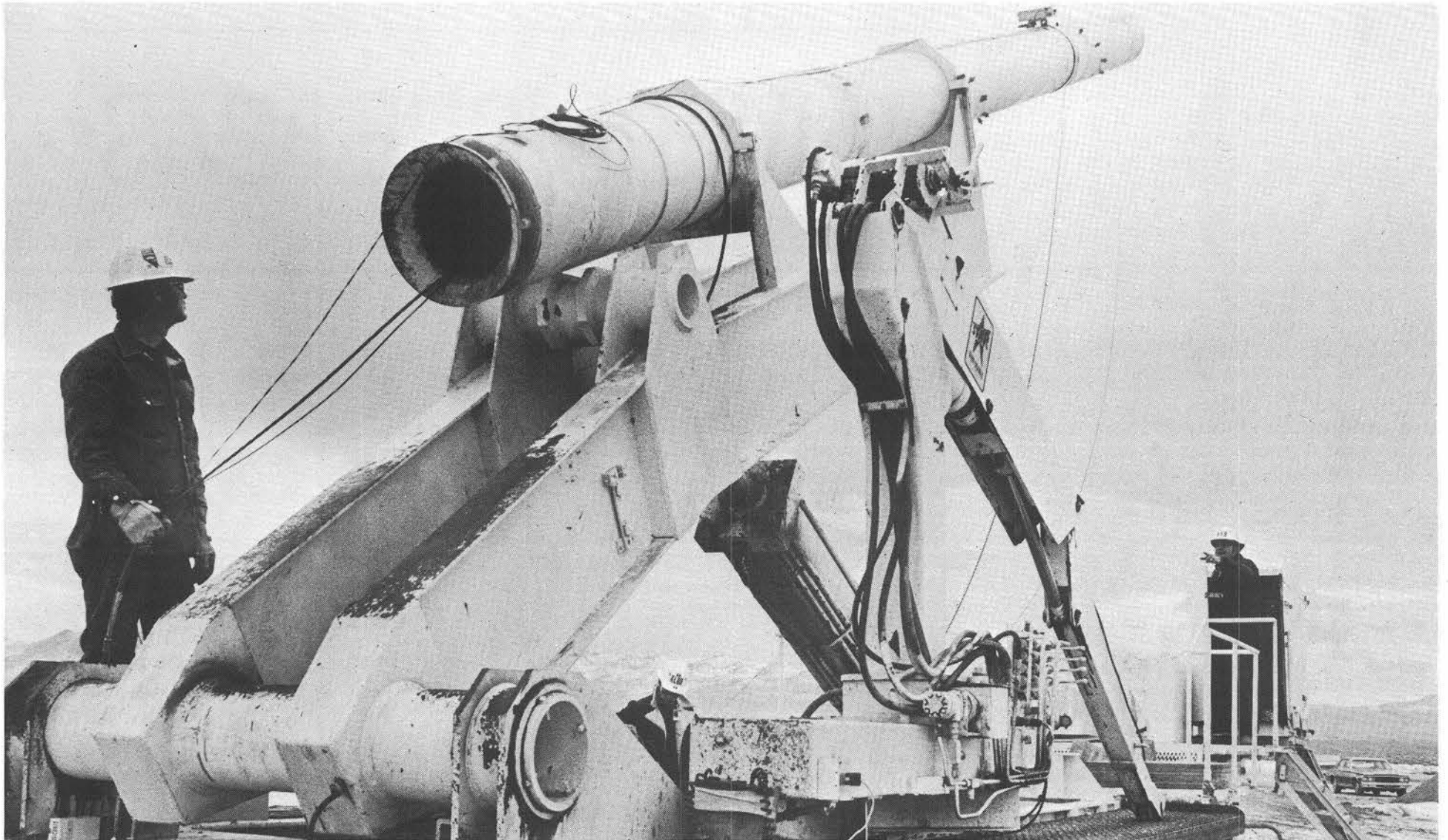
usual tourist's hassle with traffic (and in this case snow and tractors) during the pilgrimage to the Washington Monument, Lincoln Memorial, Jefferson Memorial, Kennedy Grave, Capitol Archives, and the various Smithsonians. Rather it resulted from sharing the problems of governance as perceived by lecturers and discussion leaders representing Congress, the State Department, the Department of Labor, and various Washington press corps members, lawyers, and lobbyists.

"Packed days — up at 7, bed by 11 — every day. But it was worth it. We learned as much about government as it's possible to learn in a week. And I'm looking forward to learning more, maybe by attending college there someday."



PROGRESS TOWARD CRF — The outlines of the four-building Combustion Research Facility are beginning to appear east of Bldg. 912 (upper right). The left water-filled excavation (near center) is the site of briefing room, the right one the remote job entry station for the facility's computer. The series of

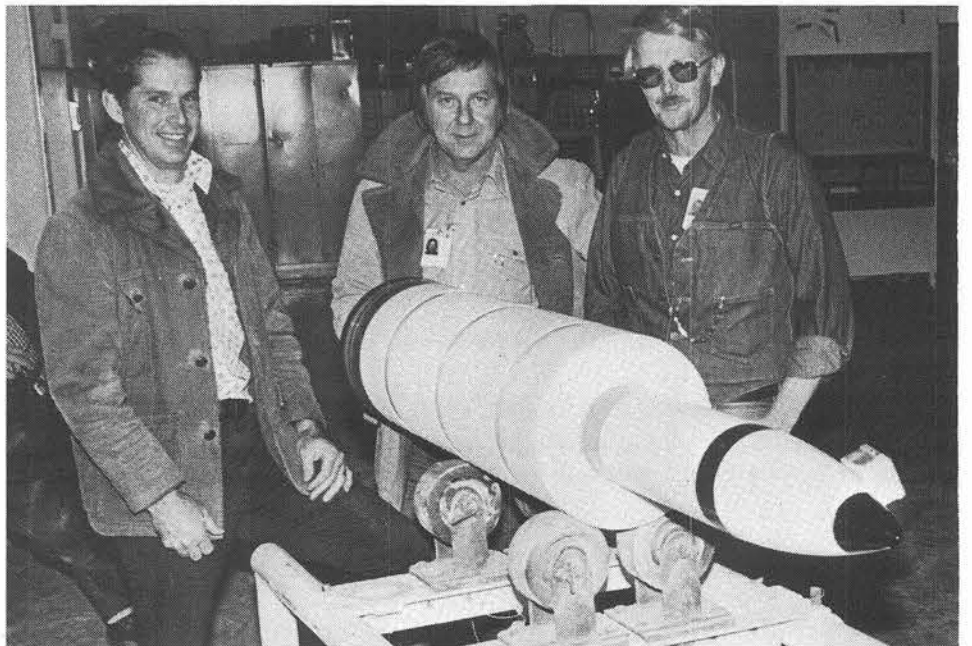
mounds in the foreground marks the east edge of the rectangular laboratory building. Trenches are for storm drains. Recent rains have slowed progress considerably, but John Marion (8201), deputy project manager for the CRF, is still optimistic about mid-1980 occupancy.



TTR DAVIS GUN is hydraulically lifted for loading by Bob Simms (1173), at right, head of TTR gun operations. At left, Terry Boscovich (REECo); William Kluesner (1173) is at center. Gun was positioned at 92° for firing.

PERSHING II PENETRATOR test unit is ready for firing. From left, Jim Lohkamp (4343), test engineer; Bill Patterson (4342), project leader; and Gene Harty (4342), responsible for recovery.

BLAST of Davis gun is viewed through binoculars by Bob Simms (1173) from safety area. Dark object above the gun is the 1830-lb. reaction mass which traveled over 4000 feet into the air and several hundred yards away from the test area.



*Continued from Page One*

## Earth Penetrator Test Successful

in a re-entry vehicle which is delivered by a surface-to-surface missile fired from a mobile rocket launcher. The RV reaches apogee above the atmosphere, re-enters and impacts into the surface of the earth. The earth penetrator separates from the re-entry vehicle and penetrates some distance before detonating. Large craters can be produced this way with small payloads. In addition, radioactive fallout is reduced when compared with surface detonation. The Army's Pershing Project Office at Redstone Arsenal is directing the Pershing II program.

One hundred pounds of HE propellant was loaded in the Davis gun by Bob Simms (1173) and the TTR gun crew. The test unit's velocity was 1795 feet per second as it left the muzzle of the gun.

The Davis gun is essentially a hollow tube, a recoil-free cannon. The powder charge is exploded between the test unit and a reaction mass (in this case an 1830-lb. mass of steel) which is ejected out the rear of the gun.

During the Pershing penetrator test, the reaction mass was tossed over 4000 ft. into the air and impacted several hundred yards away from the test area. The Davis gun barrel was positioned at a 92° angle to the target surface. Technical guidance for Davis gun operations is provided by Wayne Young (5621).

After the firing, the penetrator was located by a magnetometer probe designed by Jim Bushnell of NDT Technology Division 1552. REECo crews drilled a four-ft.-diameter hole adjacent to the test unit to the penetrator's depth, then carefully retrieved it.

"Since the test was successful," says Jim Lohkamp (4343), test engineer, "we can move into the next phase of penetrator testing. A series of three tests is scheduled starting in early April to verify penetration loading on LASL components. Then we'll have some 20 penetrator tests in various earth strata to evaluate internal components, penetrator stability characteristics and terradynamics data."

## Tonopah Upgrade Program Underway

In a typical weapons development test at Tonopah Test Range in Nevada, an aircraft streaks low over the dry lake bed target and releases the test unit. A parachute deploys, and the unit impacts into the target area. During these few seconds, the aircraft and the unit have been tracked by radar, pinpointed by cinetheodolites and photographed through giant tracking telescopes. Telemetered data from the test unit are picked up by tracking antennas, recorded and fed into a computer. Within minutes, "first look" trajectory and performance data can be viewed. Crews are on their way to dig out and recover the test unit.

Besides the aircraft drops, test units may be launched by rocket or shot from artillery pieces. Occasionally, a missile launched off-range will be directed to impact in the target area.

Through the years, TTR facilities and people have contributed immeasurably to the nuclear weapons program.

"And our equipment has grown old and worn out in the process," says Ron Bentley, supervisor of Range Modernization Division 1172. "Some of our cinetheodolites have been used for 20 years."

Ron is in charge of a major effort to update range facilities — to bring state-of-the-art electronics and optics to the increasingly complex business of weapons development testing. Total cost: \$8 million.

The updating includes construction of two major buildings, installation of special optical instrumentation, a new computer and minicomputer network, the replacement or refurbishing of obsolete electronic equipment, and improvement of the existing TTR road system.

All of the people in Sam Moore's Tonopah Test Range Department 1170 are involved in the modernization effort. Groups at Sandia Albuquerque and Livermore are contributing specialized assistance.

"Having experienced Range people do the design, development and installation work helps assure that the operation aspects get primary attention," Ron says. "This will pay dividends when the systems require maintenance or modification. And it gives our people an opportunity to grow technically."

The modernization program will be most

visible in the new four-story, 8200-sq.-ft. Operations Center whose top floor — the test control center — will have all-around windows. The building will house the new central computing complex, microwave communications equipment, main telemetry receiving and playback station, target location and test parameter display system, and test operations control center. A second building to be constructed under the modernization plan is a maintenance facility for TTR heavy equipment.

One of the more costly phases of the modernization program is replacement of the nine cinetheodolites now forming the Range's primary trajectory measurement system. With present instruments, considerable manual interpolation of their recorded data is required. The nine will be replaced by seven modern cinetheodolites, manufactured by Contraves of Switzerland, at a cost of \$2.1 million. The new units allow semi-automatic transfer of recorded data to computer tape, reducing film reading time by a factor of 30. All seven units will be mobile.

Largest manpower effort of the modernization program derives from replacement of the present DDP 124 computer system by three separate systems which will increase operational reliability and flexibility of the TTR computer support function. An Interdata 8/32D dual CPU system will be the main data gathering hub of the Range and provide computer support for test operations.

The second system in the computer replacement effort, a minicomputer network, will perform the critical parallax corrections on the tracking data relayed from radars to computer to cameras to enable automated acquisition and focusing of the optical equipment. These corrections will be performed in real-time at each station 100 times per second (current equipment is limited to 10 times per second). A CRT-based graphics system completes the planned computer replacement. It will augment the present X-Y plotting board used by TTR Operations Control.

Another major effort involves the modernization of the telemetry receiving and



NEW OPERATIONS CENTER at TTR, a four-story structure containing 8200 sq. ft. of space, is shown in architect's sketch. The \$1.4 million facility, set for completion in October, will house the new computer complex and other high value instrumentation in a modern fire-proof building. Al Faychak (1172) is coordinating Range requirements with Plant Engineering; Bob Beasley (1172) is responsible for integration of TTR communications and data networks.

data communications systems. Obsolete equipment will be replaced with new wide band tape recording units and several quick-look display systems.

Operation of a Test Range that spreads over 600 square miles requires extensive voice and data communications systems. Modernization here calls for new duplex microwave links and UHF receivers to transfer target tracking information to the various stations. New TV cameras and video distribution equipment are planned for the CCTV network at TTR. This system transmits an image and location vector information from a target to the TTR Operations Center.

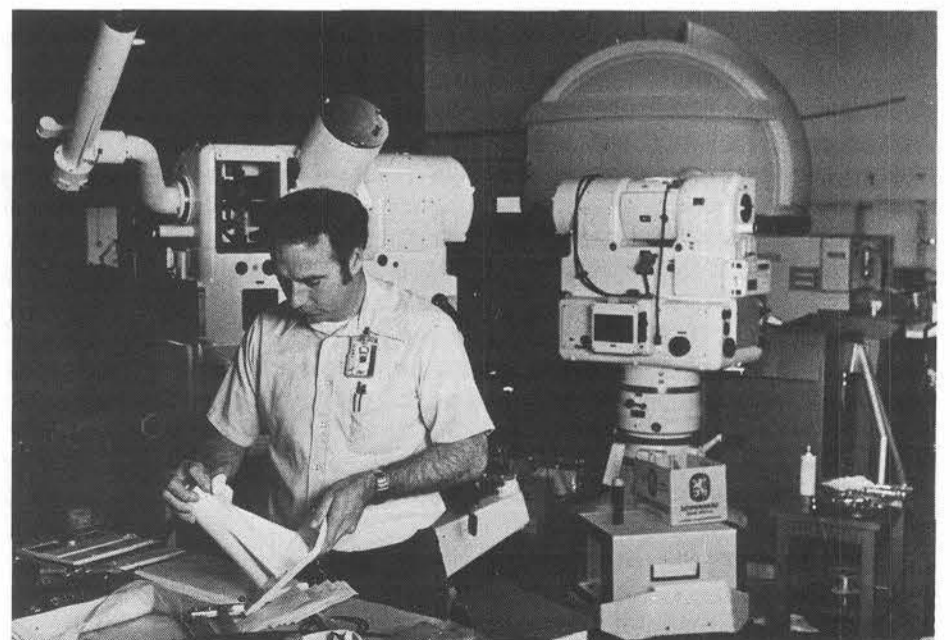
Other efforts in the update program (not part of line item funding) include:

- refurbishment of tracking radar systems;
- development of a range tracker for use with the cinetheodolites;
- expansion of the rocket launcher and gun firing instrumentation network.

"We're approaching mid-point in the modernization effort," Ron says. "We've completed the engineering and evaluation. Now we're buying, mostly commercial items, but many of them are being extensively modified for our purpose. And we're doing this with a full schedule of operations and testing. Still, the new equipment should be operational by the first of next year."



RACKS for electronics, part of \$8 million modernization program at Tonopah Test Range, are being assembled at Sandia facility at McCarran Field in Las Vegas. John Laster (1172) heads the effort. Electronics will go into TTR's new Operations Center.



AT LAS VEGAS, Jerry McCorkle (1172) works on modifications of new cinetheodolites for use at Tonopah Test Range. The instruments are manufactured in Switzerland, cost \$2.1 million.



EXPERIMENTALIST MARK SOO HOO looks on as Rick Blose (both 5835) instruments aluminum tube being tested for ductility. Machine, familiarly known as a bar buster, subjects samples to compression or tension, crushing or stretching them to failure. Tests develop both basic information on materials and provide test data in support of development work.

### The Directorates

## 5800: Materials and Process Sciences

Unlike most directorates at the Labs (where change of mission and assignment is more the rule than the exception), Materials and Process Sciences Directorate 5800 still has essentially its original charter. Changes in assignment have been evolutionary, reflecting new technological demands.

Director Dick Claassen puts it this way: "From the start, we've concentrated on selecting, adapting or developing the right material for the job, whatever it is. Then we develop the production process a manufacturer can use to supply us with the materials and products we need."

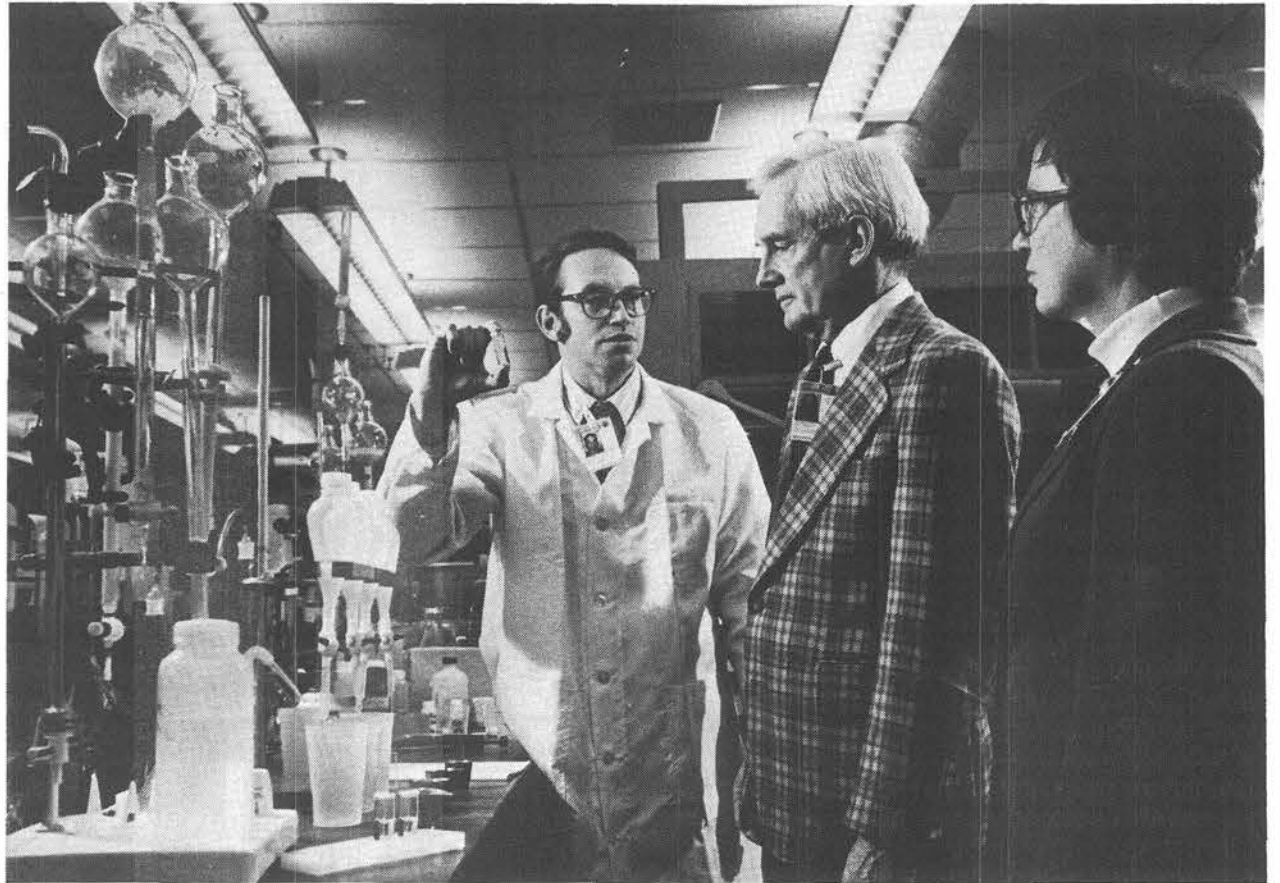
Over the year, 5800 divides its efforts between national defense projects (65%) and energy programs (35%). In all cases, the goal is to provide materials expertise. "And the earlier we get involved the better," explains Dick Claassen, "right at the conceptual stage, if possible. That way we can help designers select the best materials and point out those that would prove troublesome. The alternative (and this is too often the case) is to call us when a material or process is going sour. At that point, all we can do is try to correct a bad situation."

How does 5800 approach a design problem?

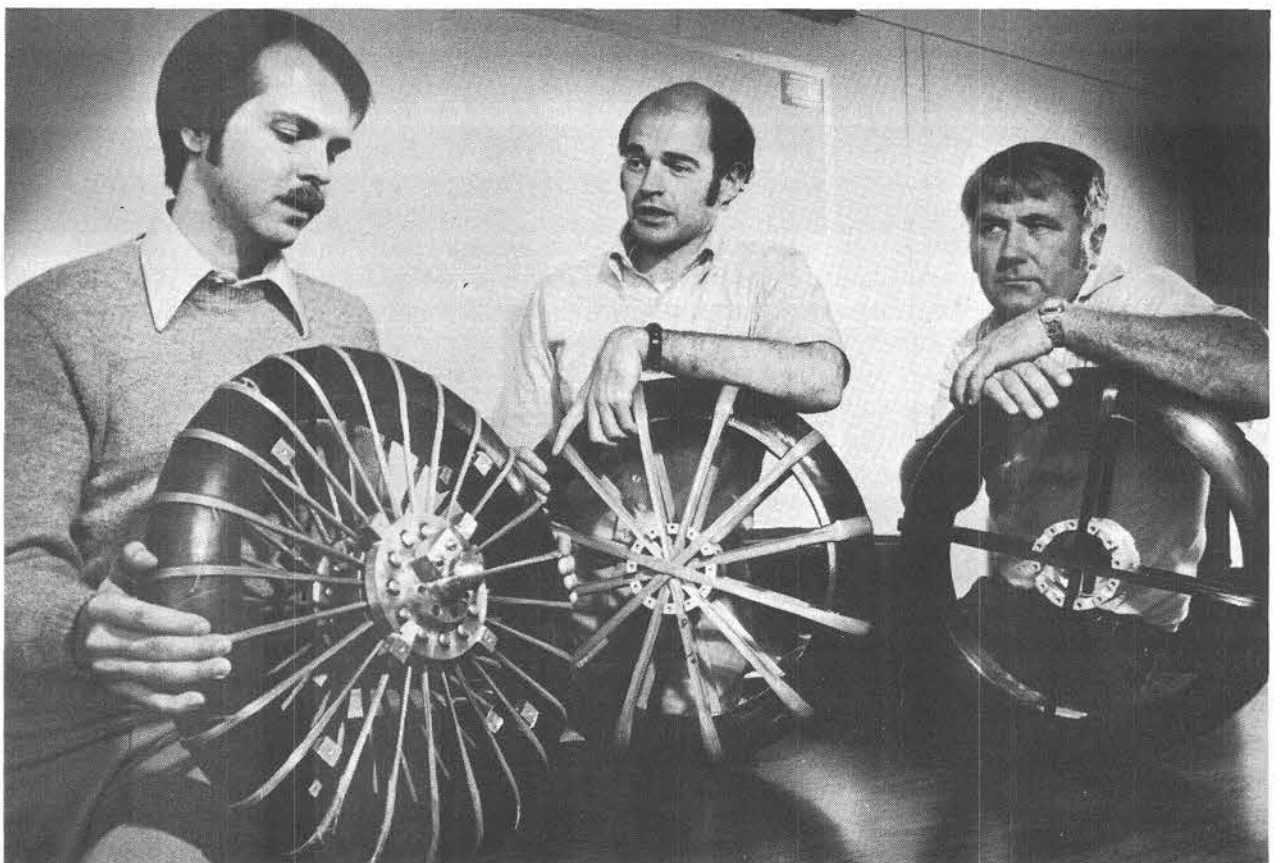
"First," Dick says, "we try to use an existing material. If that's not possible, we try to adapt one. The next step beyond is to develop a material to do the job."

Illustrating the range of their responsibilities and concerns, Dick listed these projects either underway or recently completed.

- *Projects in Support of Weapons Programs:* developing a new glass ceramic for the sealing insulator in an explosive actuator; planning a comprehensive testing program to determine aging characteristics of Kevlar parachute fabric; determining the physical



DAVE TALLENT (5821) explains to Dick Claassen (5800) and Ruth Whan (5820) the procedures used to determine if trace amounts of aluminum are present in manufactured quartz crystals. Aluminum would appear as visible fluorescence in spectrometer analysis — one of many techniques used in Materials and Process Sciences Directorate 5800 to perfect production processes.



DAVE REEDY (left), FRANK GERSTLE (center) AND HENRY STREET (all 5844) discuss composite flywheels they designed and tested as part of a research program to determine how much energy can be efficiently stored in flywheels — and what the failure mode would be if the flywheels failed. Project is representative of those assigned to materials experts in 5800 directorate.

basis for the behavior of the varistor used as a voltage regulator in a ferroelectric power supply; demonstrating new techniques for welding the molybdenum shell of a neutron tube without degrading its mechanical properties.

- *An NRC safety study* to determine the effects of a nuclear reactor core meltdown upon the reactor's concrete container structure.

- *Projects Involving Nuclear Waste:* developing a method (soon to be applied at Hanford) to solidify liquid waste; developing a long-lived canister material for radioactive waste; investigating microstructural forms of waste for better insight into the leaching process; studying the transport of radioactive ions through geologic materials.

- *Projects Involving Energy Programs:*

developing thin, inexpensive reflective surfaces in order to reduce the costs of solar mirrors; developing instrumentation to measure mirror reflectivity and conducting long-term studies in this area; developing a material for use in magnetic confinement fusion reactors that is capable of withstanding the intense heat of the plasma; investigating materials that can survive in the high temperatures and corrosive gases of molten lava.

Summing up, Dick Claassen points out that 5800, besides capabilities in materials adaptation and development, will help designers select materials that are compatible with their environment. Experts in molding technology, solid-phase joining and a host of other production processes are also available for consultation.

# feed back

*Q. Usage of the Eubank-Sandia bus has now grown to the point where the bus is usually packed to its absolute limit (20-25 people standing). I suspect increasing bus usage would continue if the space were available. I wonder if Sandia could prevail upon the city to provide*

*more buses or at least to provide larger (500 series) ones.*

A. The city has a fleet of 58 regular size buses. Of the 58, there are 52 which are

numbered in the 600 series and seat 42 passengers; there are only 6 numbered in the 500 series which seat 49 passengers. The six 500 series buses are assigned: four on the East Central route and one each on the Wyoming and Louisiana routes which come into our Tech Area. True, the Eubank-Sandia bus is very crowded but conditions on Central Avenue during the "Peak-Hours" are worse.

J.T. Gammon  
Chairman,

Employee Transportation Committee

*Q. Has consideration been given to expanding the parking north of Bldg. 880? A change to diagonal instead of parallel parking on the center roadway and use of the strip across 14th St. from Bldg. 887 would add a couple dozen more places.*

A. We have reviewed your suggestions and find them sound. Orders have been written to implement the recommended changes.


R.W. Hunnicutt — 3600

*Q. Has the Sandia Lab Federal Credit Union been authorized to make 30-year mortgage loans? If so, are there any plans to make such loans available to credit union shareholders?*

A. The Federal Credit Union Act was recently amended to authorize thirty year mortgage loans. The National Credit Union Administration subsequently released regulations implementing the changes in the laws; therefore, Sandia Laboratory Federal Credit Union may make thirty year mortgage loans. The Board of Directors is looking at the impact such a program would have on the Credit Union. At the present time there are no plans envisioned to make these loans available to the Credit Union members. The primary reason for this is that the Board of Directors can see no way that our members can benefit from such a program. The amount of money involved prohibits use of our own assets. Consequently, mortgages would have to be made which could be sold on the secondary mortgage markets as is now done by most banks and savings and loan associations. This would mean charging the same interest rates as everyone else on the market. Some savings might be made for our members by holding down closing costs but the additional employees required to service this activity would be more than the savings realized. The Board of Directors will continue to monitor this lending activity for possible future use by our members.

Clarence Sandy, President,  
Board of Directors

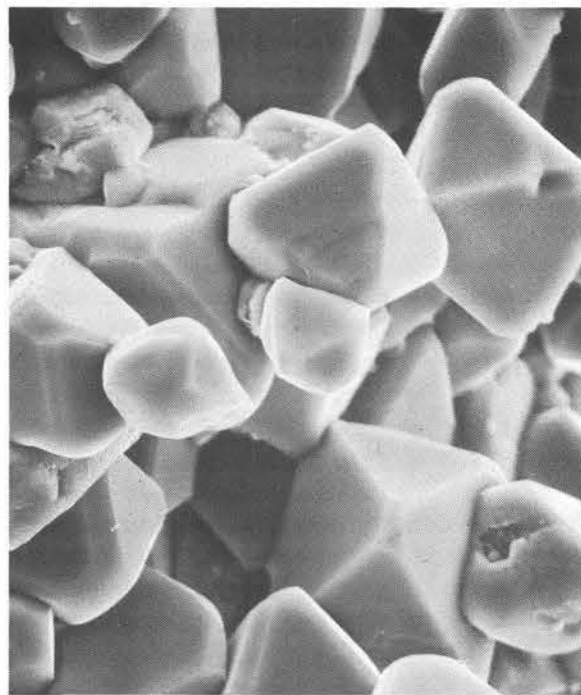
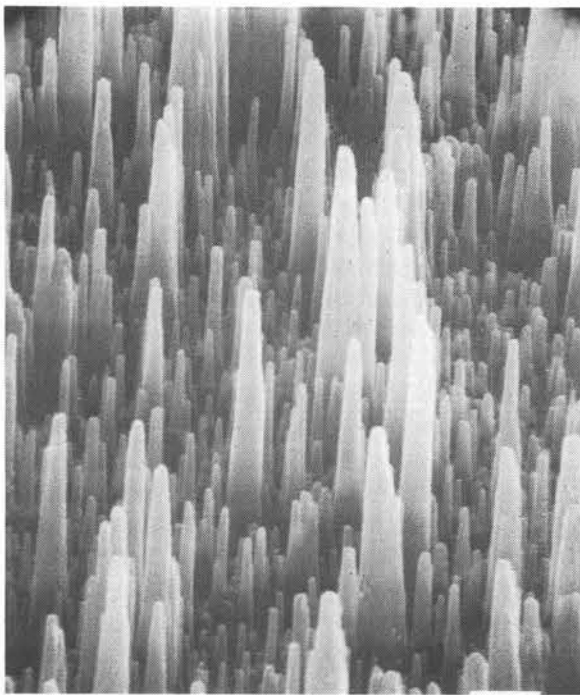
Sandia Laboratory Federal Credit Union

 Maybe General Halftrack's anticipation of a call from the Pentagon isn't absolutely unjustified. Apparently some calls do come from the throne room — a hypothesis in support of which we quote in full this item from a recent *Bell Lab News*: "For several weeks, a St. George, Utah, law office was getting mysterious telephone calls from no one. Finally, one of the office staff noticed that the 'phantom' would call when somebody went to the restroom. Further investigation revealed that the phone would ring each time someone sat down on the toilet. Using seat-of-the-pants ingenuity, Mountain Bell technicians found that the office phone system was grounded to a water pipe, and when someone sat down the circuit was broken and the phone would ring."

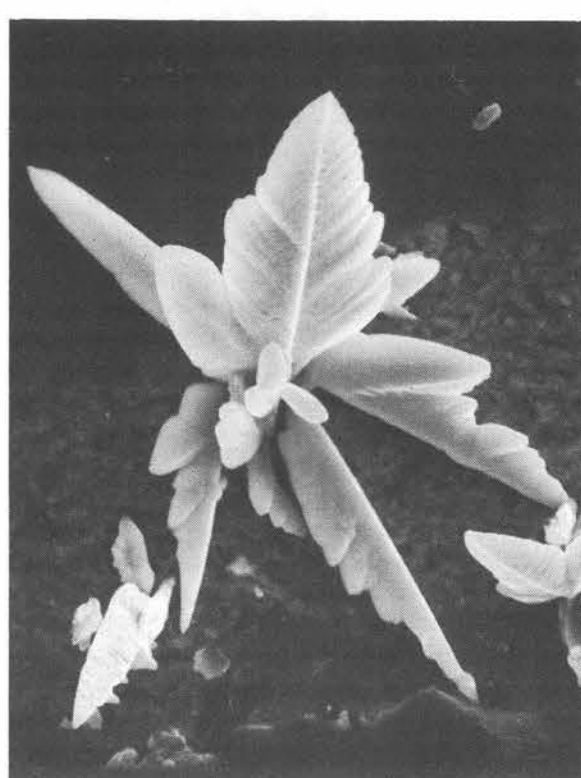
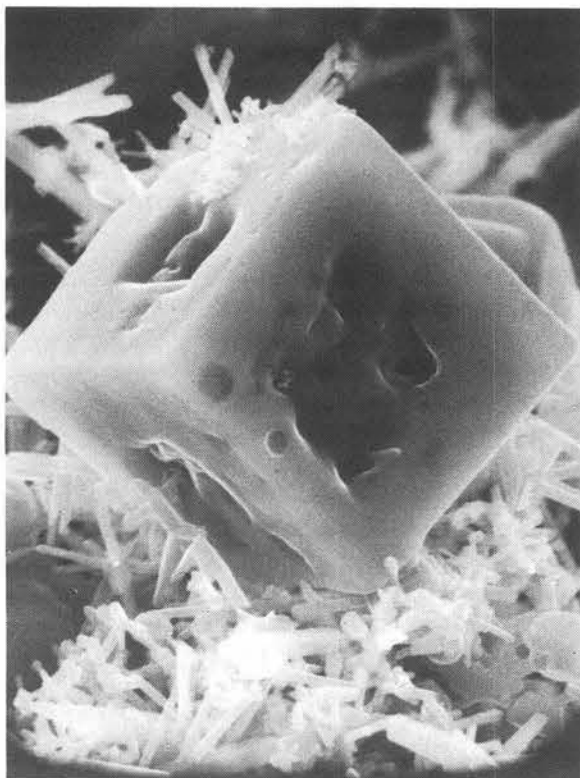
## Electron Microscopy

### A Measure of Compatability

Scanning electron microscopy is used by scientists in Electron Optics and X-Ray Analysis Division 5822 to analyze material failures. Micro area of a solid surface is bombarded with a finely focused electron beam. The resulting image, developed electronically, is enlarged and displayed on a cathode ray tube. These photos reveal some of the capabilities of the technique.



A 20,000X MAGNIFICATION of a beryllium sample eroded by hydrogen ions in a Tokamak reactor wall study is shown at left. Each individual cone is a single crystal. At right is a 2000X magnification of  $Cr_2O_3$  (chromium oxide) crystals, a corrosion product found on wires securing a platinum thermocouple. The failure of the wires was analyzed as part of a study to define suitable materials for use in an enhanced oil recovery project.



LARGE CUBIC CRYSTAL at left (3000X) was observed during a post-mortem analysis (part of an on-going component reliability study). Crystal was identified as KCl (potassium chloride). At right is a 9000X magnification of a silver sulfide crystal found growing on a weapon component during a materials compatability study associated with component aging.



SEE BILL & MONA when in Las Vegas. Sandia's McCarran Airport office in that city is staffed by Bill West (1135) and Mona Chikhani (REECo). They make travel arrangements for Sandians visiting the Nevada Test Site and Tonopah Test Range, and handle local purchasing.

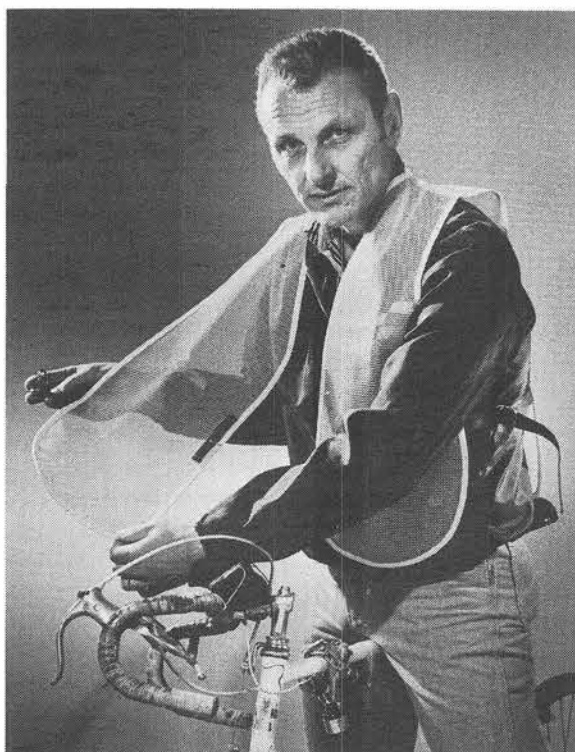


NEW & BLUE — For the first time since the early 50's, Security has gone to new uniforms, with dark blue trousers, light blue shirts, black shoes and black appointments. Al Arsenault and Lou Tidwell do the honors here.

# Sandia PEOPLE Report



SNOW JOB — It's not your everyday occurrence when there's enough of this stuff in the Tech Area for Dotty Brockman, Mary Davis and Jean Prusak (all 3254) to do their thing. Alleged to be feminine, we concluded sculpture certainly was a credit to his/her/its gender.



INSURANCE — It's too bad LAB NEWS doesn't print in color so that the dazzling orange of the safety vest worn by cyclist Bob Pace (5832) could be better seen. Turned out by NM Industries for the Blind, the mesh vest costs \$3.75, while the same version with fluorescent stripes goes for \$6. You can see samples in the LAB NEWS office, Bldg. 814; the vest itself can be purchased at the outlet on 2200 Yale SE.



TTR TRIVIA is a periodic publication for Sandia and REECo people at Tonopah Test Range. Deb Ninedorf (REECo), secretary to Divisions 1141, 1142 and 1143, edits the informative newsletter. She has been at TTR since June 1978.



## Fun & Games

*Open House at the Gym* — Surrounded by all the trappings of military power, including an omnipresent corps of Air Police, the Base gym and its large roster of assigned personnel seem constitutionally unable to stop a 14-year old boy from rifling your locker and mine. The problem is epidemic. If you go to the gym after work, you'll see a gaggle of adolescents hanging around, inside and out, warily sizing you up as you enter the locker room. One thing you can say for the youngsters — they don't discriminate. They'll take clothing, shoes, money, watches, yes, even soap dishes. Somehow this doesn't shape up as a Mafia operation, yet the thievery continues to flourish. Maybe we should view it philosophically, as a form of character shaping with a twist — crooked.

\* \* \*

*Fitness & the military* — Used to be that the Air Force insisted that its members 40 and under be able to pass a physical fitness test that consisted of, among other things, the completion of a mile-and-a-half run within a certain time, depending upon age. The premise was that those pursuing a military career might someday be called upon for an extraordinary measure of exertion — the kind a wartime situation can bring. The Air Force has backed off, however, from the 1½-mile run, and now those 35 and older must only complete a three-mile walk. If you're under 35, you now have the option of the 1½-mile run, or the three-mile walk, or timed running in place. Reading between the lines of the Air Force release, it appears that some number of Air Force types bravely performed the 1½-mile run without any prior training whatever and had the bad taste to keel over with a coronary. The officials point out that the three-mile walk in the prescribed time (43½ minutes for a 35-year old male) is considered "strenuous" and requires preconditioning.

This time we sort of agree with the Air Force. Whatever your age, don't be caught up in the macho thing when first you essay physical fitness. At best you'll suffer aches where you didn't know you could ache; at worst . . . well, the prospect approaches the funeral.

\* \* \*

*Boating* — Pre-season boat inspection and registration is being offered by the State Park & Recreation Commission at the State Fair Grounds on March 10, 11 and 17, 18 from 9 a.m. to 4 p.m. Use Gate 9 on Lomas Blvd. The Coast Guard Auxiliary will be on hand to provide courtesy examinations of pleasure boats. Their "Seal of Safety" is awarded to boats that meet legal requirements and additional safety standards set by the Auxiliary.

\* \* \*

*A bite for a bite* — Runners, take heart! Glenn Waymen of San Antonio was jogging along when a large border collie bounded up to bite him on the backside. He (Glenn) sued and got \$3287 from the owners, who told the court that the dog ". . . was a victim of rowdy children." Um . . . for \$3287 we'd be inclined to look that dog up next time we're in San Antonio.

## A Way of Life With the Johnsons

For most of us, marriage enrichment means tangible things like dinner out or tickets to the theater or a surprise gift. To Ralph Johnson (5815) and his wife Ruth, the concept embodies much more. As coordinators of a weekend marriage enrichment program, they devote much of their free time to helping others strengthen their marriages — and, in the process, strengthening their own.

The program began nearly five years ago at the Queen of Heaven Parish in NE Albuquerque when a dozen concerned couples began meeting informally to talk about marriage, its problems and rewards.

At the suggestion of parish priest, Father Paul Baca, the initial group organized a marriage enrichment weekend for the parish. Things snowballed. They ran the program three times a year. Other churches heard of the program, sent members to participate. Catholic parishes in Albuquerque and Santa Cruz and Clovis asked for the program. So, too, did two Lutheran churches in Albuquerque.

"The challenges of marriage aren't all that different faith to faith, marriage to marriage, community to community," Ralph comments. "We're helping groups all over the state get organized. But they have to run their own show, adapt it to their own needs."

How does the program work?

"We don't teach," Ralph explains, "and we don't give anybody textbook instructions. But we do share our experiences, our views

and ideas. It's comforting to most people to realize that what they're facing in their marriage (good and bad) isn't all that unusual. And hearing how others have dealt with crises and unhappiness, have solved problems and grown closer, helps us all gain insights."

To keep the program vital and alive, the same team of 12 couples never runs two successive programs. But the structure remains the same.

Friday night's presentations concentrate on the goals of marriage and the needs of the individual. Saturday, during the day, the films, presentations and discussions involve the challenging aspects of marriage — the aspects that can tear a marriage apart. In the evening, after a candlelight dinner, the emphasis is on the positive side, on the aspects that draw couples together.

"On Sunday," Ralph says, "we talk about the importance of the marriage to the individual and to the community and the importance of having God involved in our marriage. It's our firm belief that marriage is the cornerstone of society — that if you want a stronger society, you have to build stronger marriages."

If you're interested in attending a marriage enrichment weekend (or in organizing your own), call Ralph Johnson at 4-6235 or his wife, Ruth, at 884-8250 for schedules and locations of upcoming programs. There's one taking place somewhere in the state almost every weekend.

\* \* \*

*Pool & patio help* — C-Club rec manager Bob Giersberg needs to hire some young people for the summer to work in the club's pool and patio area. Interested persons may pick up an application at the C-Club office during business hours.

\* \* \*

*Softball* — Teams not yet registered should contact Bob Giersberg at the C-Club, 4-8486. Openings still exist for men's slow pitch teams.

\* \* \*

*Triathlon* — Entry forms for this unique contest are now available from LAB NEWS, Bldg. 814, 4-1053 as well as from the C-Club, which is sponsoring the event. Schafer Sport Shop on Moon and Gardenswartz Sports on Menaul also have supplies of the form. The 3rd annual Triathlon is set for Sunday, April 8, and consists of ten miles of biking, five miles of running and a quarter-mile swim, all conducted without pause between the various phases. Two warm-ups for the Triathlon are scheduled for this month: a five-mile fun run over the Triathlon course takes place Saturday, March 17 at 9 a.m., starting from the oval track north of the gym; and a Triathlon swim meet will be held Sunday, March 25, at 9 a.m. at the Olympic Pool, with 100 to 400-meter events on the program. Both the run and the swim are open meets, no fee, and you sign up by showing up.

## Sympathy

To Frances Morris (3000A) on the death of her father, Feb. 21.

To Ken Ley (4535) on the death of his father in Espanola, Feb. 18.

To Jay Terrell (1472) on the death of his father in Albuquerque, Feb. 16.

To Barbra Ford, (2145) on the death of her brother in Estancia, Feb. 16.

To Leonard Baker (3742) on the death of his sister in Columbus, Ohio, Feb. 19.

To Andy Quintana (3000) on the death of his sister in Cochiti, March 4.

To Secundino Baca (1473) on the death of father in Mora, Feb. 28.

## 20 Years Ago

### Sandia VP to Washington

S.P. Schwartz, Sandia VP and General Manager, was one of a group of the nation's business leaders called to Washington last week by Secretary of the Treasury Robert B. Anderson. The one-day briefing session . . . was highlighted by the personal appearance of President Eisenhower.

\* \* \*

### New Wind Tunnel Facility

A . . . contract for new office and instrumentation space plus two 10,000 cu. ft. vacuum tanks awarded last week by the AEC marks the last stage of a \$600,000 expansion program for Sandia's Wind Tunnel Facility, Bldg. 865.

. . . The new tunnel is being designed to produce speeds up to Mach 9 . . .

# The Leisure of the Theory Class

(Editor's Note: This thoughtful essay on energy growth is the work of Robert Laney, Deputy Laboratory Director of the Argonne National Laboratory. It is reprinted with the permission of Public Utilities Fortnightly.)

There is an ambiguous quality about much of the current discussions of energy growth in the United States. An obscure but increasingly central element of these discussions is the social context in which alternative energy futures are perceived by their advocates. The long-range social consequences of energy policy, rather than narrow technological or economic considerations, are beginning to dominate national debate.

Where in past years, for instance, nuclear debate was either pointedly *pro-nuclear* or *antinuclear*, and focused on thermal pollution, reactor safety and nuclear power costs, some are now questioning the social acceptability of any energy-intensive future, whether fossil or nuclear. Issues of growth versus no growth, centralized versus decentralized energy sources, and the different visions of the future with which they are related begin to emerge as central themes.

Although Ralph Nader may still write, "... atomic fission is unsafe ... unnecessary ... and economic folly," we sense that he is now carrying out an obligatory ritual. Most serious observers acknowledge that, as compared to coal for instance, nuclear power is neither costly nor dangerous. Likewise, coal is not costly as compared to imported oil nor dangerous as compared to liquefied natural gas.

This new and growing arena of debate is defined by Lovins when he writes, "If nuclear power were safe, clean, economic ... it would still be unattractive because of the political implications of the kind of energy economy it would lock us into." In a similar vein, Russell Train writes, "We ... should seize upon the energy crisis as a good excuse and a great opportunity for making some very fundamental changes that we ought to be making anyway for other reasons."

Such statements are welcome, at least as clarifications of the underlying issues which must be resolved. Some of us have been too slow to understand that the use of energy so pervades the fabric of our lives that new strategies cannot be studied in isolation. Alternative technical pathways must be compared together with the social and economic environments towards which they are intended to lead. The quality-of-life consequence of changed energy patterns, although difficult to foresee, is after all the essence of what concerns us: What kind of a world will we pass on to future generations?

## Prophetic failures

This new way of structuring the central energy issue, however, raises at least two related problems of which we must be aware. First, the selection of a present energy strategy in order to secure long-range social effects places a heavy reliance on accurate prophecy. We need only recall past failures to be doubtful of our prophetic abilities.

For instance, recall that in 1939 the Department of the Interior said we would exhaust U.S. oil resources by 1952; or recall that in 1938 our best demographers forecast a U.S. population growth of less than 50 million by 1980 (the actual number will be about double the forecast). Arthur Schlesinger reminds us that, "The failure of prophecy is

surely one of the reasons why the American people do not take the energy crisis with due seriousness." While we must, of course, calculate the future as best we can, we must admit that our record is poor, and futurism remains a risky exercise in this complex and random world.

A second problem, one more related to my thesis, arises with this new social context of the energy debate. When we accept alternative visions of a distant future as possible bases for modifying present courses of development, we allow the visionary to compete in the idea marketplace on the same terms as the pragmatist, but without an equivalent data base. Can we call comparisons valid where one alternative is largely real and measurable and the other is largely theoretical and unmeasurable?

Because it is so difficult to test the worth of a theoretical option, it is not sufficient to evaluate critically the future social structure which is promised. We must also try to understand the viewpoint of the proposer. We must ask, for instance, if his proposal may be colored by his own socioeconomic status.

Mr. Nader says "... the nuclear technology has long been in the hands of a priesthood whose private concerns about risks and consequences were rarely permitted to mar public expressions of its faith." Admittedly we are all creatures, if not captives of our pasts. Let us, therefore, weigh all visionary proposals of the future by viewing them through the eyes of their proposers. After all, there may be a no-growth priesthood. There may be a zero-risk priesthood. There may be a priesthood of sanctuary seekers, looking backwards to find the future.

In this context, we can inquire if there is a causal relationship between the views of no-growth enthusiasts and the general and growing economic affluence of our society during this century. It is clear that this movement has emerged only in economically developed, highly industrialized countries. This may be because only the developed countries offer evidence of environmental threat from unconstrained growth. It may also be that only in these countries have populations reached levels of affluence which allow extensive organized effort to be diverted from the pursuit of basic human needs into studies of fundamentally altered futures.

## "Hierarchy" of needs

Writing about human needs, the psychologist Abraham Maslow defined the "Maslow hierarchy" of needs (basic physiological need for food, sleep, etc., security, affection, esteem and self-actualization) and the dynamic relationship between them. According to this relationship, a higher human need emerges only when more basic needs have, at least to some extent, been met. For example, the pursuit of esteem and self-actualization implies the already existing satisfaction of more basic wants. In the contrary condition, unmet basic needs of food, shelter and security tend to preclude an active concern for the so-called higher needs.

Very few countries of the world meet the basic needs of their citizens as fully as the United States. Our gross national product per capita is \$6,600 as compared to \$923 for Latin America, \$258 for Africa and \$632 for the Organization of Petroleum Exporting Countries nations. Our physical quality of life index, which measures infant mortality, life expectancy and literacy rate, is 96, roughly

double that of most African and Asian countries.

So widely satisfied are the basic needs among most of our citizens that recent psychological studies among U.S. college students show an apparent inversion of the Maslow need hierarchy. It was found that today many students list self-actualization as their *primary* need. In the United States, the basic needs have become so assured that they are taken for granted!

For further confirmation of a direct causal relationship between economic status and growth attitudes, note the messages expressed in the recent statement issued by the National Association for the Advancement of Colored People. "Energy supply development throughout our nation's history has been critically important to economic growth ... As long as ... a majority of black Americans continue to face a constant struggle to attain even the basic necessities of life, our first priority must be the attainment of economic parity for black Americans. ... We cannot accept the notion that our people are best served by a policy based upon the inevitability of energy shortage ..."

The fact that ours is an affluent society which affords large numbers of citizens relief from grinding poverty is surely cause for some satisfaction. The fact that the no-growth advocates are found largely among the more educated and hence the more leisured elements of that society is as surely a cause for us to view their value judgments with some skepticism and to question the practical worth of their theories.

Let me repeat, to be leisured in the sense of having disposable time of one's own is something we all seek. I do not use the term critically. I only note that many of those who think and write seriously about our energy future, being among the leisured, may advance theories which reflect their socioeconomic status, just as that status colors their perception of the present and their hopes for the future. Hence, to refer to the leisure of the theory class is merely to observe that when leisured members of an affluent society seek social change, their theories for bringing that change about should, like other theories, be weighted according to the source.

There are a few tests by which you may recognize, and thereby give appropriate weight to, leisured class theories on energy growth.

Being a leisured member of an affluent society like ours so protects one from many of life's prevalent risks as to allow a theorist seriously to propose the "no-risk" theory. The "no-risk" theory suggests that a plausible test for accepting a new energy technology is that it should not under any imaginable circumstances or in any remote future expose society to any risk. This same theory excludes consideration of the risk of *not* employing the technology. This "no-risk" theory could be proposed only by persons already living well above life's waterline, where the necessities of life are secure.

The leisure of the theory class also produces an unusual number of broad plans for the future world, unaccompanied by clarifying road maps or navigation manuals. In spite of ample evidence to the contrary, leisured theorists have an unreasonable admiration for our ability to execute intricate plans for remolding society. Surely we need broad plans and planners, but we also have a

(Continued bottom next page)



Henry Welch (1485) and Eulita Welch (1472)

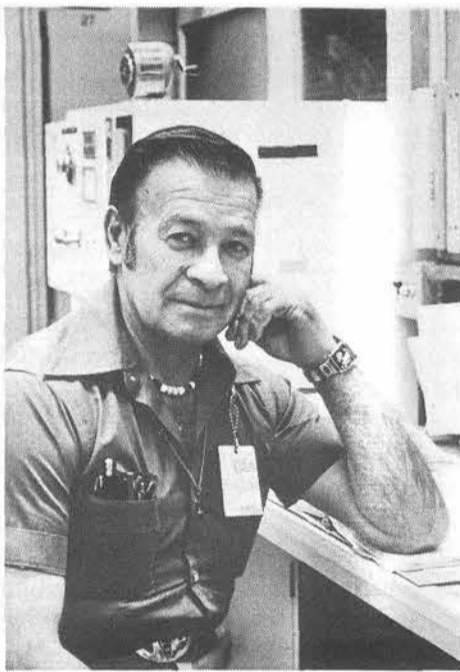
# Retiring



Lorin Furrow (4614)



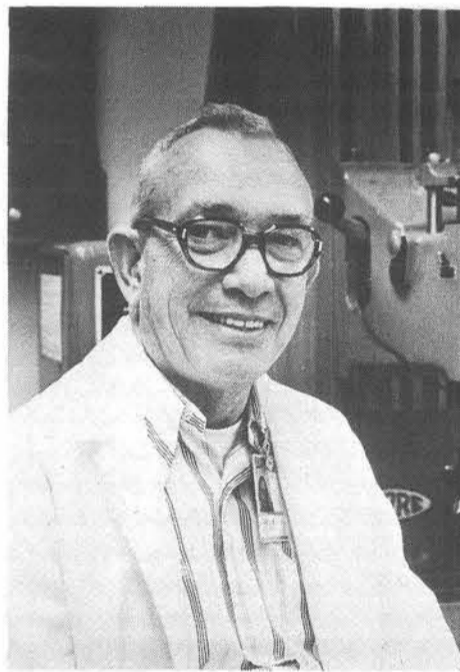
Helen Walsh (5800)



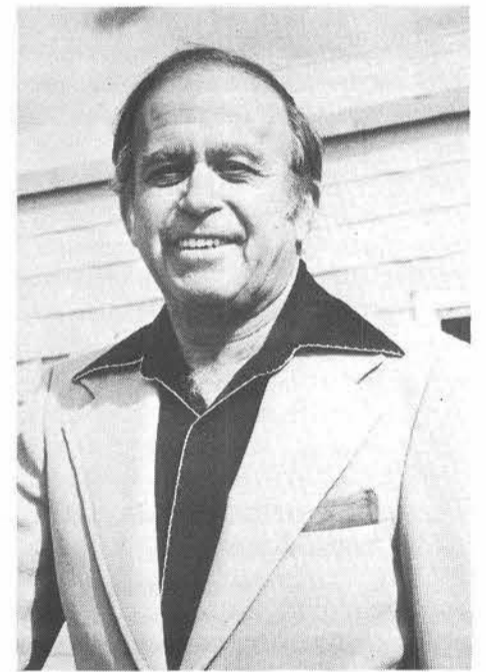
Frank Leyba (1472)



Bob Becker (1485)



James Bedeaux (1485)



Doc Savage (1761)

right to ask that a vision of the future, however attractive, be related to today's realities, and the two somehow interconnected. Before adopting the theory that we can live off the sun, wind, tides and geothermal heat, we should require at least as much detailed reasoning in support of this view as is currently supplied in the environmental impact statement for a new fossil or nuclear power plant.

In the arena of debate, the leisured theorist pits genteel energy notions against the grubby facts of coal dust and nuclear wastes. It may not occur to him that he is thus given an unfair advantage because, by his theory, there is little difference between notions and facts. This may seem to you an unfair match, but it is inevitable — until an equivalent weight of evidence becomes available on the alternate systems. In the meantime we should

agree that one grubby fact is worth 100 untried theories, however clean.

Finally, members of this theory class appear to be motivated more by what they are against than what they are for. They are against growth, against centralized energy production, against oil tankers, offshore drilling, liquefied natural gas terminals, nuclear power, coal power, pipelines, and on and on. To produce energy, what is there left to be for? Mostly renewable resource energy systems which do not yet exist to any degree and which, therefore, must be evaluated largely by theoretical means. If one's planning horizon is remote enough, and one's faith in science strong enough, theoretical energy systems can appear very promising. But this must be an act of faith rather than a rational analysis.

These then are some of the marks of the

theory class: a naive yearning for risk-free energy; ambitious social plans which are short on implementing directions; advocacy of untried, hence pure, energy systems; and rejection of the known, accompanied by unbounded faith in the unknown.

Our industrialized society has achieved economic sufficiency for the many. By thus succeeding, it has happily made possible a wider use of its intellectual talents to study the present problems of society and to propose alternatives which may lead to a still better future. In evaluating and weighing these alternatives we must remember that economic affluence and personal security, when long enjoyed, may breed a class of theorists whose values and programs do not reflect the needs of a still restless, striving, and unfulfilled society.

## Take Note

Ken Mills (4552) and Pat Walter (1585) are organizing a raft trip down the Colorado River through the Grand Canyon to run six days starting July 4. The trip starts at Flagstaff with a charter bus to Lee's Ferry, then down river by raft to Whitmore Wash with time out for a trip to the top of the rim by burro. The group will then fly back to Flagstaff. All this costs \$410 per person with a \$30 rebate due at the end of the trip. Ken will explain this and other details. Call him on 298-1315 or call Pat on 298-0471.

\* \* \*

A Treasury Department release states that two new series of Savings Bonds will be introduced in January 1980 — the EE and HH bonds which replace, respectively, current E and H bonds. The principal difference between the EE and E bonds, which for some reason isn't even mentioned in the release, is that the \$25 bond is no more. The new minimum is the \$50 bond that is purchased for \$25 and matures in 11 years, 9 months. LAB NEWS will carry more on the new bonds as soon as more information becomes available.

\* \* \*

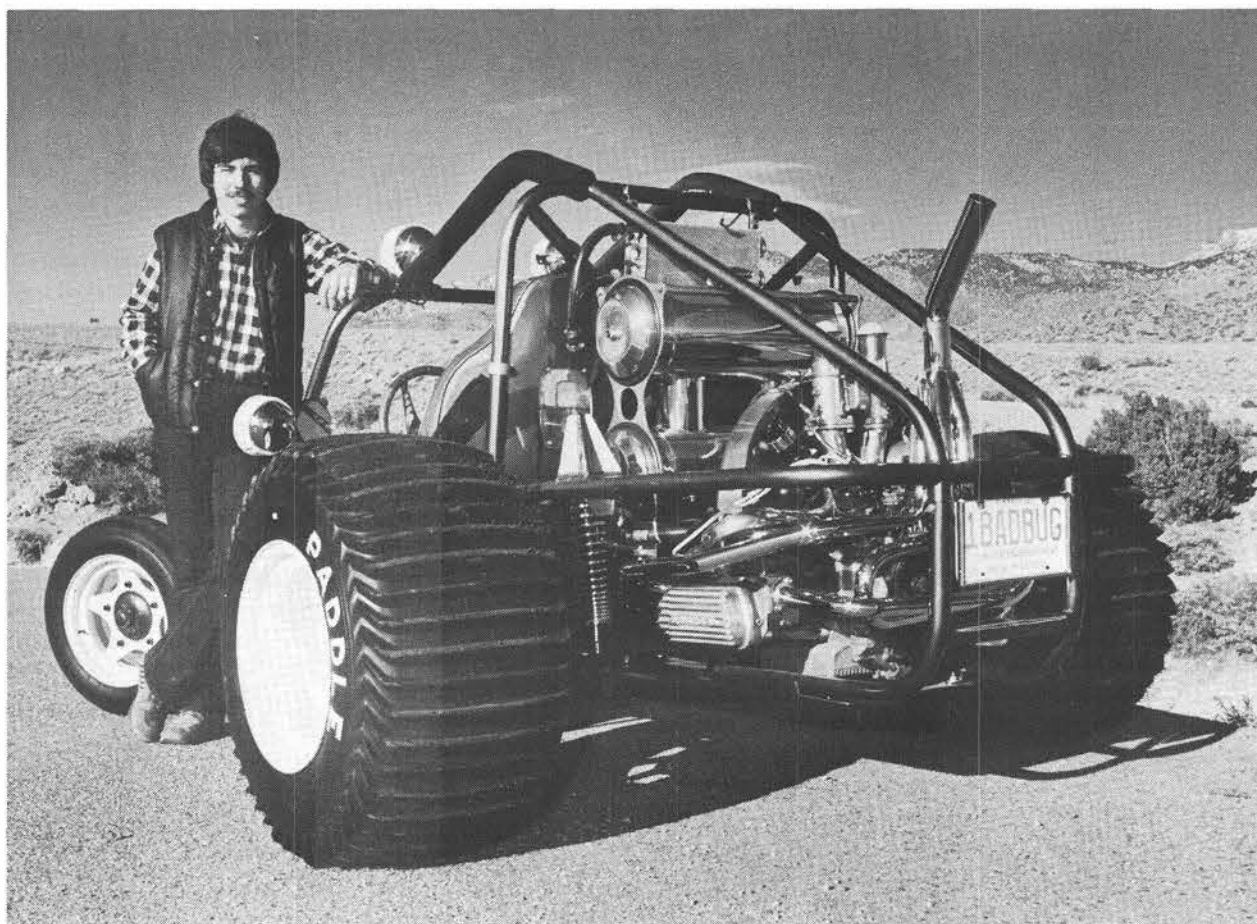
Harold Agnew, LASL's recently retired head honcho, has an acknowledged talent for the pithy statement. Here's one of his latest (from the *Washington Star*): "As time goes on, there will be nobody around who has witnessed a high-yield nuclear explosion." So Agnew suggested this program to condition presidents to the realities they face: "Every 5 years of so, you have presidents and other heads of states strip down to their BVD's and stand maybe 15 miles from a large megaton-range explosion. It's not the light or the blast that scares you, it's the heat that scares the bejesus out of you. It just keeps getting hotter and hotter and you begin to think maybe somebody made a mistake and you're just going to be burned up."

\* \* \*

Max Leavitt from T-VI's Albuquerque Skill Center dropped by to review the LAB NEWS' retiree job reference file. He's looking for a retiree to teach advanced electronics for at least six months, with some possibility that the position will become permanent. It's a seven-hour per day, five-day per week job. An EE degree is desired. You can reach Max on 842-0875.

\* \* \*

The Albuquerque Museum will shortly move into its new building near Old Town, vacating one of Albuquerque's classier structures. If you came here more than 12 years ago, you'll recall this charming building as the site of our municipal airport. Built in 1939 under the Works Project Administration (WPA), it used local materials and Southwestern motifs. City architect Ernst Blumental was the designer. The WPA funded the project for \$704,000 mainly for labor, while the city supplied about \$175,000 worth of materials. Most of these materials — including the adobes for the walls, the flagstones for the floors and the timber for the massive vigas — were locally procured and prepared on the construction site. And, to maximize labor, most of the work was done by



REGGIE TIBBETTS (3613) originally built this VW dune buggy as a racing machine. Now it wins prizes in custom car shows. Reggie is an apprentice in the Plant Maintenance/Structural program.

### Custom Show Winner

## Reggie Tibbetts Builds Dune Buggy

It resembles a squat spider and sounds like an angry hornet. The license plate reads, "1 BADBUG."

Still, owner/builder Reggie Tibbetts (3613) says his showcase VW dune buggy is "a sweet lady — pretty, responsive, well-mannered and she wins prizes."

Strictly a show machine now — seven top prizes in custom car shows in Albuquerque, Amarillo, El Paso and Red Rock (near Gallup), the buggy started life as an off-road racer.

"I built it with racing in mind," Reggie says, "and for a couple of years we entered competitions around the state. It was great fun, and I won several firsts. But I rolled it a couple of times and that hurt. I'd entered the pro class by this time and figured I either had to put a lot more money into the machine or find an easier way to get my kicks."

Reggie enjoys working on the car about as much as he enjoys driving it. He has stripped it to the bare frame and rebuilt it some 10 times. The last few times he's had show room competition in mind.

"To win in a show, the car must be immaculate," Reggie says. "That means hours of work. I honestly don't know how many hours I've worked on the car. There was a three-month period when I was unemployed, and I worked on it every day for 10 or 12 hours."

hand. It has the look of one-of-a-kind. We understand the Junior League, which will occupy the building, plans to restore the lobby to its original state as a gift to the City.

\* \* \*

A five-part TV series on conservation and alternative energy sources in New Mexico will feature many of Sandia's energy projects. One segment focuses on Sandia's car poolers, bike and bus riders, representing modes of energy conservation. The series will be shown on Channel 5, March 19 through 23, each evening at 7 p.m.

Even the way the car is displayed in a show is important. Reggie has won three "Best Display in Show" awards. All of these prizes mean points in a national competition. Reggie has a good shot with the points he's gathered so far this year to place in the nationals in Kansas City. He took third last year.

Outstanding feature of the buggy is its gleaming chrome engine. It's an 1835cc VW engine modified with a big bore kit, racing cam, ported heads and Weber carburetion.

The buggy frame is welded steel tubing painted "starburst blue and platinum pearl." Front end and transaxle are modified VW.

The big paddle tires on the rear cost \$200 each. The rear wheels have special steering brakes — for instance, lock the right wheel and the car spins right.

"The car is street legal," Reggie says. "I used to drive it to work in the summer. Might do it again. It's a problem — scratch the paint and you have to fix it before you can enter a show again."

Nowadays the car travels to shows on a special trailer that Reggie built. He's working on another show machine — a '54 VW sedan which will be finished "one of these days."

"My wife and I recently bought a house. So I don't know when I'll be able to work on the car again. But I'll take time out to show the buggy."

A former comptroller at Sandia became a vice president of Western Electric on March 1. He is Warren Corgan, named WE's VP for government and commercial sales, a new position and a new division to be headquartered in Greensboro, N.C. Mr. Corgan was at Sandia from 1969 to 1971.

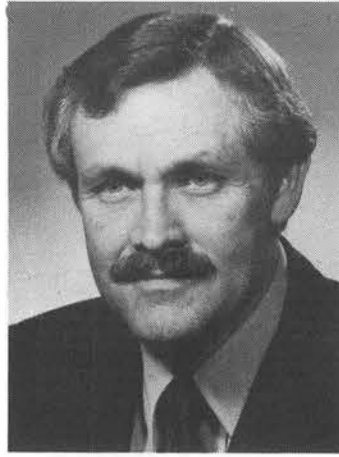
### Congratulations

To Mr. and Mrs. Rod Geer (3161), a daughter, Anna Caitlin, March 2.

# MILEPOSTS

## LAB NEWS

MARCH 1979



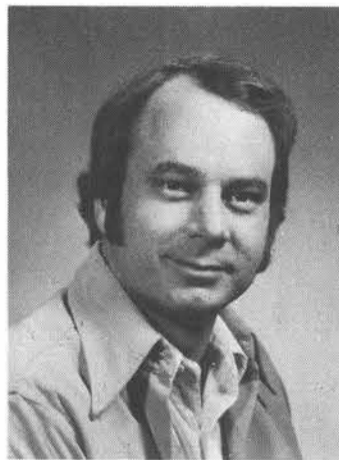
Lloyd Nelson-5830 15



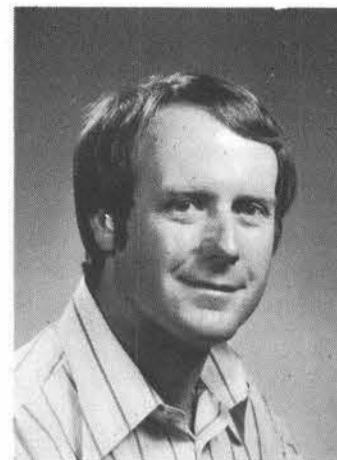
Bob Colgan-3153 20



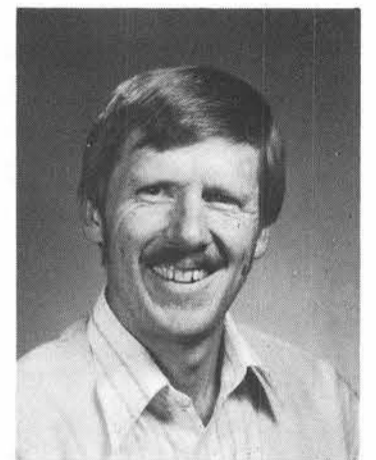
John Patrick-1173 20



Gary Ferguson-7144 10



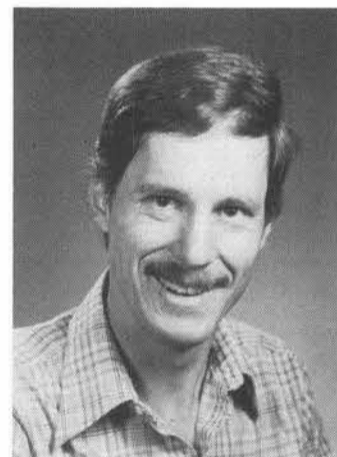
William Boyer-4251 10



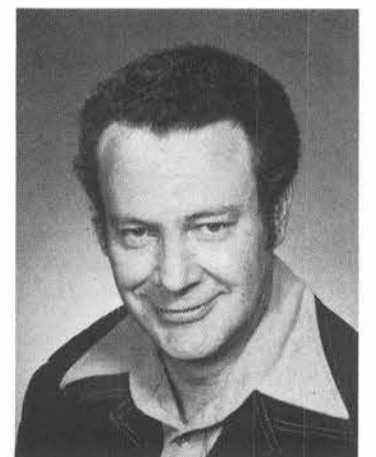
Tom Wright-4241 10



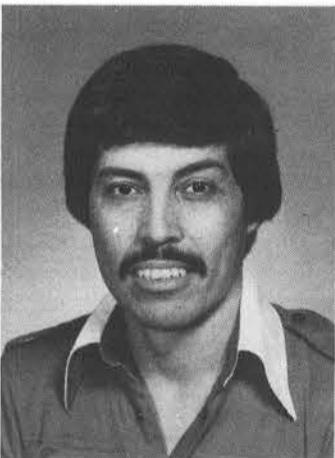
Helen Watkins-3721 15



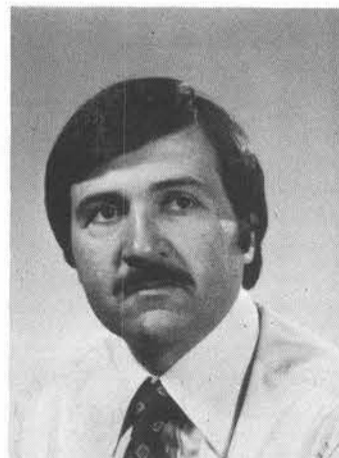
Bruce Bulmer-5511 10



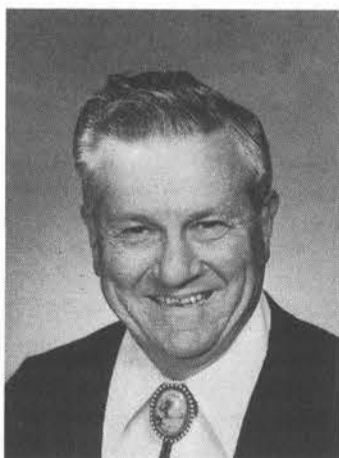
John Milloy-4541 15



Joe Santana-2454 10



Albert Hodapp-5631 10



Clarence Carter-4336 25



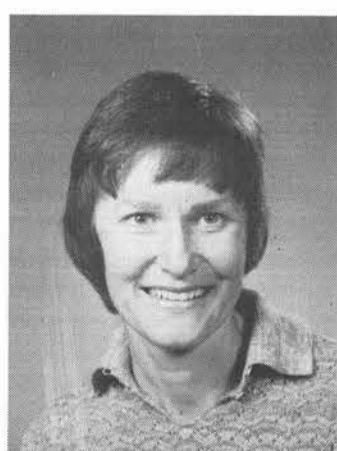
Ellie Owens-3720 15



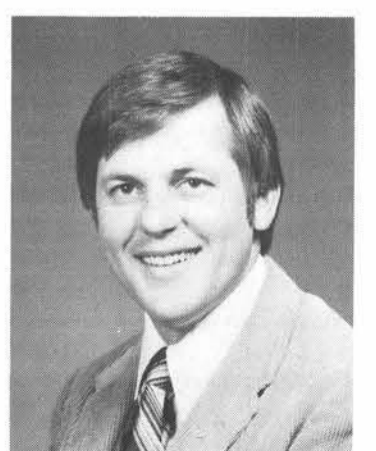
Eloy Cota-1765 15



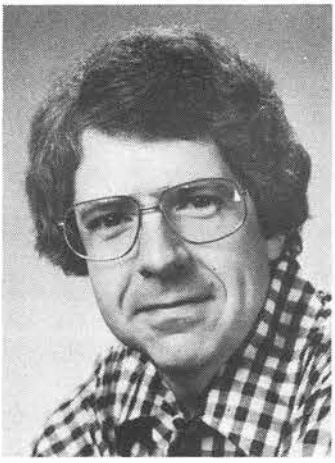
Alan Stemm-1412 15



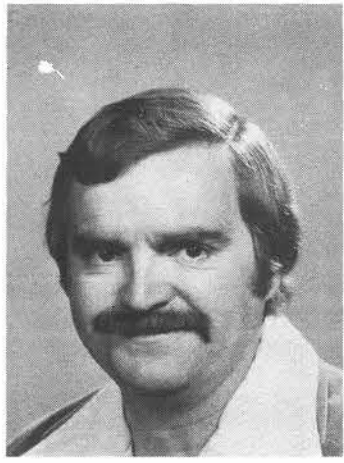
Marian VanDelinder-3213 10



Don McCoy-5511 10



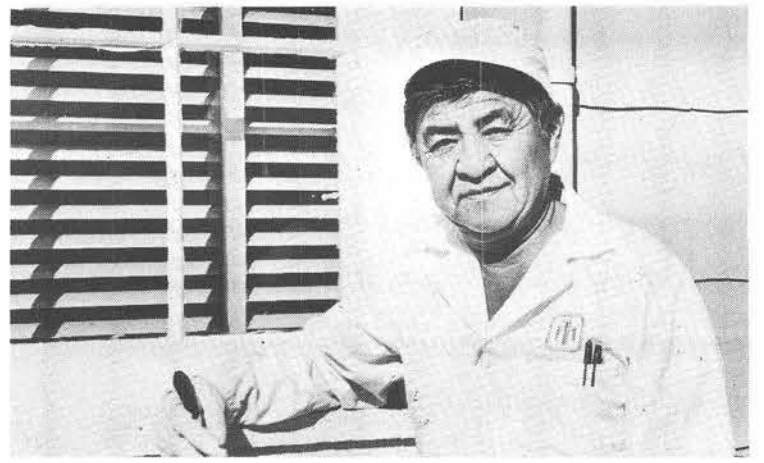
Wayne Chrisman-8341 15



Gary West-1522 20



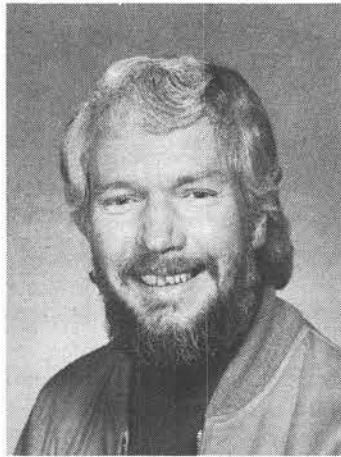
Bess Roach-8266 25



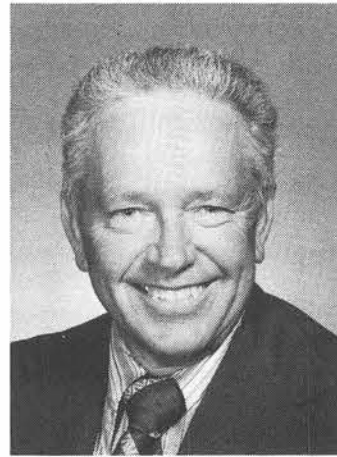
Jose Jojola-3613 30



Bob Finnell-1172 30



Oscar George-5511 15



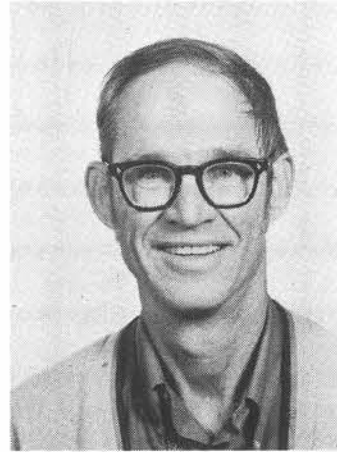
Albert Heckes-2515 20



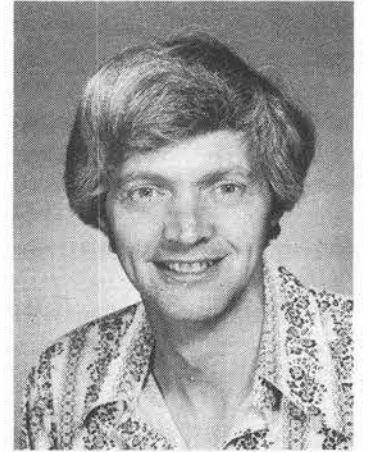
Abbie Williams-3152 15



Frank Casner-2162 25



James Leeman-2162 15



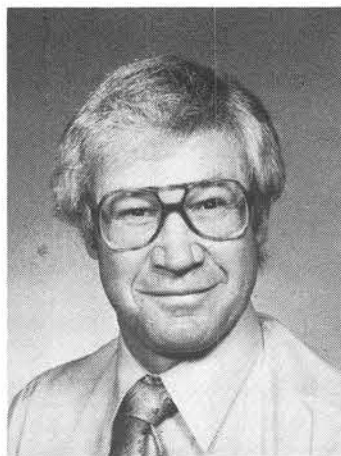
Gerry Stoker-1552 15



Armstead Arrington-3618 30



Leroy Paulson-1556 30



Don Hanson-1736 20



Yale Knox-3155 30



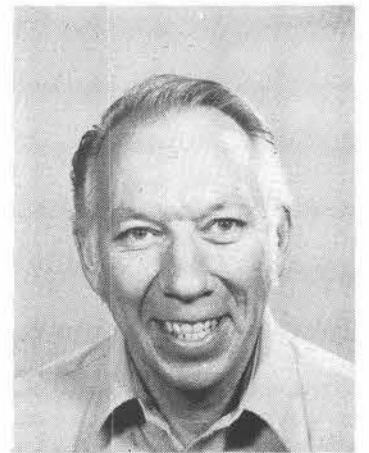
Edward Burgess-4719 15



Dora Montoya-4410 10



Robert Sheldahl-5633 10



Edwin Beauchamp-5846 15



**Coronado Club Activities**

# St. Pat's Bash Set March 17

TONIGHT'S HAPPY HOUR buffet features London broil with Bernaise sauce, baked potato and the works for \$5.95. Use your discount coupon. Natural Persuasion with singer Charlie Baca plays for dancing.

On Friday, March 16, corned beef and cabbage is the buffet feature, Jeanne Rich and Friends make the dance music.

ST. PATRICK'S DAY will be celebrated at the Club Saturday, March 17, with a prime rib or king crab dinner, a group called Southside on the bandstand, and entertainment by the Oasis Dancers — a troupe of Middle East dancers. Tickets (\$7.25 for members, \$9.50 for guests) must be picked up by March 10.

SINGLES will also celebrate St. Patrick's Day with a mingle on Friday, March 16, starting at 4:30 in the Eldorado room. In addition to the usual munchables, Irish beer will be available for two bits.

TEENAGERS dance Saturday March 10 from 8 to 10 p.m. to music by a group called Spoiler which was formerly called Max (whatever that means). Anyway, they're Albuquerque's newest and hottest rock band. Member parents should pick up tickets for their youngsters.

SANADO WOMEN hold their annual Spring Art Exhibit at the Club on March 12 with entries hanging from 4 to 8 p.m. Everyone is invited to see the show. Winners will be announced the following day, Tuesday, March 13, at a luncheon. Speaker Jo Hickerson will discuss flower arranging. For reservations, call Nancy Dodd on 296-1158.

DISCO LESSONS (disco here, disco there, left, right) are again offered by the club with instructor Renee Velasquez setting the rhythm. The series of five lessons start Wednesday, April 11; cost is \$15 for members. Sign up at the Club office now.

TRAVEL DIRECTOR Ed Neidel walks around the Club lobby on Friday evenings between 6 and 7 handing out literature on all kinds of super travel packages. He can fix you up with trips to Europe, Mexico or Hawaii at super savings.

FRIDAY	SATURDAY
9— 4:30 HAPPY HOUR London Broil with Bernaise Sauce Adults - \$5.95 Under 12 - \$2.50 "Natural Persuasion"	10 — Table Tennis Tournament Beginning at 8:30 a.m. TEEN DANCE 8:00-11:00 "Spoiler" (formerly Max)
16 — 4:30 HAPPY HOUR Corn Beef & Cabbage Adults - \$4.95 Under 12 - \$2.50 Jeanne Rich & Friends 4:30 Singles St. Pat's Celebration	17 — Special St. Patrick's Bash Members - \$7.25 Guests - \$9.50 Prime Rib or King Crab 8:30-9:00 The Oasis Dancers 9:00-1:00 Dancing to "Southside"



OASIS DANCERS will appear at the Club's St. Patrick's Day celebration March 17. They specialize in ethnic, folkloric and oriental (belly) dancing. At left are Sandians Pat Eiler (1473) and Chris Abrams (1471).

## Labs Counselor Offers Help To Families Of Alcoholics

Consider these two national statistics:  
 — the alcoholic is rarely isolated, totally by himself or herself. On the average, four persons — usually family members — are adversely affected by his or her alcoholism.

— the family of the alcoholic suffers for several years before the obvious effects of the disease begin to show up on the job in the form of deteriorating performance.

Coping with an alcoholic is difficult and frustrating. This is especially so when the alcoholic is a loved one, a close member of the family. The Sandia Labs Alcoholism Program is now able to offer family counseling to employees who have a family member who is alcoholic, as well as to the families of alcoholic employees. Mary Fallon (3320) joined the staff of the program a year ago, enabling Sandia Medical to expand its alcoholism services to include family counseling.

Mary earned her PhD in education and counseling from the University of Notre Dame and, before coming to the Labs, taught counseling and guidance as well as human relations at the college level.

"I like to refer to what I do as 'hope and help,'" Mary says. "If the alcoholic's family can identify the problem early and seek help, then in may be possible to avoid years of needless suffering and the resulting adverse effects on family members' job performance. Because the people close to the alcoholic become as sick or sicker than he or she is, family rehabilitation is essential."

As the rehabilitated alcoholic employee represents an appreciable dollar savings for industry, each recovering employee who is a member of an alcoholic's family can also effect savings, particularly in the declining use of personal absence, sick leave and health care costs. Improvement in the family situation also supports the alcoholic's rehabilitation

and continuing sobriety. "We don't want to be the last resort," Mary states, "we want to be the first opportunity for recovery for the family and the alcoholic."



MARY FALLON (3320) advises employees and their families when someone in the family is an alcoholic. Besides counseling, Mary has access to a number of additional helpful resources. Her telephone is 4-3993.



With the blessings of the Canadian government, a small FM station near Montreal is regularly broadcasting subliminal messages — messages urging listeners to relax and take it easy. Designed by a consulting team of psychiatrists, the hidden messages are imprinted over "easy listening" music. If the Canadian form of this bland mindless music resembles our own, we predict extreme difficulty in measuring the success of this effort. How can you relax when you're already asleep?